Pest Alert

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Bactrocera dorsalis, Oriental fruit fly (Hendel) (Tephritidae)

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INTRODUCTION: Two male Oriental fruit flies, *Bactrocera dorsalis* (Hendel) (Tephritidae), were captured in a methyl eugenol-baited fruit fly detection trap in St. Petersburg (Pinellas Co.) on 17 May 2022. Intensified delimitation trapping over the 80-square mile surrounding area resulted in two additional males being captured in traps approximately three miles away on 14-16 June 2022. Oriental fruit fly is one of several members of a complex of closely related species that are of great economic importance, and the Florida and U.S. Departments of Agriculture respond aggressively to the detection of any of these fruit flies in the state. When a single male fly is detected no control measures are needed. Single Oriental fruit flies have been found in Florida on numerous earlier occasions, most recently in August 2021 in Casselberry (Seminole Co.). The last such eradication program for Oriental fruit fly took place in Miami-Dade Co. from June 2018 to October 2018.

TAXONOMY: The *Bactrocera dorsalis* complex of fruit flies, in the broad sense, comprises at least 68 species with varying distributions in Asia, Australia and the Pacific islands. Most of these species can be identified with confidence. *Bactrocera dorsalis s.s.,*however, has a complicated taxonomic history. In 1994, several species were newly described as part of a cryptic species complex: *Bactrocera papayae* Drew & Hancock, *Bactrocera philippinensis* Drew & Hancock, and *Bactrocera carambolae* Drew & Hancock. In 2005, *Bactrocera invadens* Drew, Tsuruta & White, was added to the mix. Intensive re-examination of this complex in recent years has led to the synonymization of several of these species. As a result, only *B. dorsalis* and *B. carambolae* are now recognized as distinct and valid species (Schutze et al. 2014).

DISTRIBUTION: *Bactrocera dorsalis* occurs in a broad swath from Pakistan and India east to southern China, Taiwan, and southeast Asia, including Malaysia and the great island groups of Sumatra, Java, Borneo and the Philippines. It has been introduced and established in some Pacific islands, such as the Hawaiian Islands since about 1945, and Guam since 1947. It invaded east Africa in about 2003 and spread very rapidly throughout large parts of the continent. *Bactrocera dorsalis* is a frequent invader into California where numerous eradication programs have been conducted.

The native distribution of *Bactrocera carambolae* overlaps extensively with that of *B. dorsalis*, in much of the southern part of its range, and it was introduced into Suriname about 1975 where it has become established.

HOST PLANTS: These flies infest a broad range of host plants including fruits and vegetables wherever they occur. The exact host range varies by area of infestation. Many specific host records are uncertain because of misidentification of the fruit fly species involved. This pest has been recorded from over 430 different hosts.

ADULT IDENTIFICATION: The thorax typically is mostly dark with two prominent, yellow stripes dorsally, a yellow scutellum, and yellow areas laterally; the abdomen has a prominent, 'T'-shaped, black pattern on a rusty brown background, plus variable other dark markings laterally. The wings are clear, except for a thin, continuous brown band extending from the stigma to the wing tip, and a thin, oblique, band of brown overlapping the posterior cubital cell. The face has a conspicuous black spot below each antenna.

ATTRACTANT: Males, but usually not females, are attracted to methyl eugenol, a naturally occurring plant compound. Detection of this and many other fruit flies depends on a widespread grid of baited traps in areas where introductions are likely to occur. Once a fly is detected, the trapping density is greatly increased for several square miles around the detection point. If further flies are detected, an eradication program may be implemented. As methyl eugenol is such a powerful attractant, an insecticide can be added to the bait to remove the males from the population, which can then no longer maintain itself. This is known as the male annihilation technique.

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Bactrocera dorsalis, Oriental fruit fly, male, dorsal view.
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Bactrocera dorsalis, Oriental fruit fly, male, dorsal view.
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Bactrocera dorsalis, Oriental fruit fly, female, lateral view.
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Bactrocera dorsalis, Oriental fruit fly, male, lateral view.
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Oriental fruit fly captured St. Petersburg, June 2022.
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